

**Table S1.** Reaction times on the Flanker Task per group and condition

	Mean	SD
<i>Bilinguals</i>		
Incongruent	457.54	42.88
Congruent	407.92	46.38
Neutral	408.86	45.26
<i>Monolinguals</i>		
Incongruent	545.66	73.92
Congruent	479.41	60.55
Neutral	475.04	61.18

**Table S2. ENCODING.** Brain regions showing significantly more activity for bilinguals than monolinguals (statistical threshold at  $p < .001$  uncorrected).

threshold at p<0.001 uncorrected).

Region	BA	Cluster Extent (voxels)	Peak Voxel Level		MNI coordinates		
			T	equiv Z	x	y	z
EFFECT OF GROUP							
Bilinguals > Monolinguals							
Right middle temporal gyrus	21	6919	6.28	5.35	46	-54	10
Right fusiform gyrus	18		6.18	5.29	24	-72	-14
Left fusiform gyrus	19		5.95	5.14	-28	-68	-6
Right inferior frontal gyrus (p. opercularis)	44	1150	5.46	4.80	58	14	30
Right cerebral white matter	48		5.26	4.66	40	2	22
Right precentral gyrus	6		4.87	4.38	58	6	38
Left inferior temporal gyrus	20	1084	5.40	4.76	-46	0	-38
Left inferior frontal gyrus (p. orbitalis)	38		5.11	4.55	-26	18	-24
Left temporal pole	38		5.06	4.52	-46	18	-22
Left supplementary motor area	8	814	5.31	4.69	-8	26	50
Right supplementary motor area	8		4.76	4.30	10	26	56
Left superior medial frontal gyrus	32		4.24	3.90	-8	38	38
Left inferior parietal cortex	39	726	5.48	4.82	-48	-58	44
Left supramarginal gyrus	40		4.41	4.03	-58	-46	36
Left angular gyrus	39		4.24	3.89	-44	-66	50
Left postcentral gyrus	4	324	5.05	4.51	-58	-2	40
Left precentral gyrus	4		4.74	4.28	-60	0	32
Left inferior frontal gyrus (p. triangularis)	44		4.65	4.21	-58	14	30
Left cerebral white matter	21	384	4.72	4.27	-46	-28	-2
Left middle temporal gyrus	21		4.17	3.84	-54	-34	-4
Left cerebral white matter	-		3.46	3.25	-40	-42	6
Right superior frontal gyrus	9	314	6.25	5.33	14	60	36
Right superior frontal gyrus	9		4.12	3.82	18	46	48
Right middle frontal gyrus	-		3.59	3.37	28	60	28
Right cerebral white matter	2	261	4.25	3.91	46	-30	36
Right supramarginal gyrus	2		4.24	3.90	58	-32	34
Right supramarginal gyrus	48		4.16	3.89	42	-30	26

Left supramarginal gyrus	2	198	4.69	4.24	-52	-28	36
Left supramarginal gyrus	2		4.14	3.82	-60	-24	40
Left cerebral white matter	48		3.96	3.67	-42	-30	34
<b>OBJECTS TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Left inferior parietal cortex	40	531	4.63	4.20	-48	-54	42
Left inferior parietal cortex	40		3.76	3.51	-58	-46	36
Left inferior parietal cortex	40		3.74	3.49	-52	-46	42
Right angular gyrus	39	498	4.64	4.20	50	-66	42
Right middle occipital gyrus	39		4.29	3.93	38	-72	28
Right cerebral white matter	19		3.99	3.70	28	-64	22
Right middle temporal gyrus	21	397	5.35	4.72	46	-54	10
Right middle temporal gyrus	21		4.06	3.75	52	-46	4
Right middle temporal gyrus	37		3.73	3.49	58	-64	14
Right fusiform gyrus	18	239	4.41	4.03	24	-72	-14
Right cerebellum	18		4.14	3.82	16	-74	-16
Right fusiform gyrus	19		3.68	3.44	26	-72	-6
Left inferior temporal gyrus	20	202	4.70	4.25	-46	0	-38
Left cerebral white matter	20		3.47	3.27	-40	-6	-24
Left temporal pole	38		3.44	3.24	-34	10	-24
<b>SHADOW TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right lingual gyrus	18	1364	5.29	4.68	8	-74	-8
Left fusiform gyrus	19		5.29	4.68	-28	-72	-8
Right fusiform gyrus	18		5.27	4.66	24	-72	-14
Right calcarine gyrus	17	491	4.41	4.03	18	-58	10
Right calcarine gyrus	17		4.18	3.85	8	-64	12
Right cuneus	18		4.16	3.83	10	-82	18
Right cerebral white matter	19	409	4.57	4.15	36	-72	2
Right middle occipital gyrus	19		4.40	4.02	44	-82	10
Right middle occipital gyrus	39		4.34	3.97	38	-72	28
Left inferior frontal gyrus, (p. orbitalis)	38	407	5.23	4.64	-26	18	-24
Left inferior frontal gyrus, (p. orbitalis)	11		4.50	4.10	-20	12	-18
Left cerebral white matter	48		3.92	3.64	-38	6	-16
Right precentral gyrus	6	286	4.44	4.05	58	6	36
Right inferior frontal gyrus (p. opercularis)	44		4.14	3.82	58	14	28
Right precentral gyrus	6		3.63	3.40	50	8	48

**Table S3. RETRIEVAL – CONGRUENT.** Brain regions showing significantly more activity for bilinguals than monolinguals (statistical threshold at  $p < .001$  uncorrected).

Region	BA	Cluster Extent (voxels)	Peak Voxel Level		MNI coordinates		
			T	equiv Z	x	y	z

<b>EFFECT OF GROUP</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right superior frontal gyrus	10	508	6.15	5.27	16	62	24
Right middle frontal gyrus	46		5.38	4.75	26	62	26
Right superior medial frontal gyrus	9		4.82	4.34	10	60	38
Right cerebellum	30	390	6.21	5.31	24	-32	-24
Right fusiform gyrus	37		5.26	4.66	32	-34	-14
Right cerebral white matter	-		4.47	4.07	24	-18	-30
Left caudate nucleus	-	388	5.74	5.00	-6	16	10
Left superior orbitalfrontal gyrus	11		5.14	4.58	-22	20	-12
Left cerebral white matter	11		4.60	4.17	-18	24	-6
Right superior orbitalfrontal gyrus	11	339	7.13	5.88	16	56	-10
Right superior frontal gyrus	10		4.70	4.25	18	60	4
Right rectus	11		4.59	4.16	6	52	-18
Right rolandic operculum	48	289	6.87	5.72	54	-18	22
Right superior temporal gyrus	22		3.77	3.52	66	-12	12
Left superior temporal gyrus	48	267	6.54	5.52	-48	6	-12
Left superior temporal pole	38		4.90	4.40	-44	26	-18
Left cerebral white matter	-		4.77	4.30	-42	36	-20
Left parahippocampal gyrus*	37	101	5.26	4.66	32	-34	-14
			4.64	4.20	26	-28	-20
			4.53	4.12	24	-26	-24
			4.47	4.07	24	-18	-30
			4.27	3.92	26	-22	-28
			3.91	3.63	26	-30	-16
Right parahippocampal gyrus*	36	77	6.14	5.26	-22	-16	-32
			4.26	3.91	-22	-24	-26
Right hippocampus*	20	53	4.36	3.99	26	-14	-12
			3.57	3.35	40	-12	-14
<b>OBJECTS TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Left caudate nucleus*	-	25	4.36	3.99	-6	16	8
<b>SHADOW TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right superior frontal gyrus	10	267	5.18	4.60	16	62	24
Right middle frontal gyrus	46		4.45	4.06	26	62	26
Right superior medial frontal gyrus	9		3.90	3.62	10	60	38
Left caudate nucleus*	-	20	4.07	3.76	-6	-16	8
		19	3.66	3.43	-16	24	-6
			3.58	3.36	-10	22	-6
Left parahippocampal gyrus*	36	35	4.97	4.45	-22	-16	-32

\*p < .05 SVC

**Table S4. RETREIVAL – INCONGRUENT.** Brain regions showing significantly more activity for bilinguals than monolinguals (statistical threshold at p<.001 uncorrected).

Region	BA	Cluster Extent (voxels)	Peak Voxel Level	MNI coordinates
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			T	equiv Z	x	y	z
<b>EFFECT OF GROUP</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right superior frontal gyrus	10	2339	6.93	5.76	18	58	18
Right inferior frontal gyrus (p. triangularis)	45		6.49	5.49	56	34	2
Right superior medial frontal gyrus	9		6.10	5.23	10	60	38
Right inferior temporal gyrus	20	1159	5.61	4.90	44	-12	-28
Right cerebral white matter	-		5.21	4.62	22	-14	-10
Right parahippocampal gyrus	37		5.14	4.57	34	-34	-14
Left cerebral white matter	-	726	5.63	4.92	-6	-12	30
Right superior frontal gyrus	6		5.46	4.80	14	14	54
Right cerebral white matter	-		4.44	4.05	6	8	28
Left caudate nucleus	25	461	5.10	4.54	-6	16	8
Right cerebral white matter	25		4.38	4.00	4	30	4
Left anterior cingulate cortex	11		4.14	3.81	-4	40	4
Right rolandic operculum	48	331	6.96	5.78	52	-18	24
Right supramarginal gyrus	48		4.40	4.02	60	-26	28
Right supramarginal gyrus	2		4.36	3.99	62	-24	36
Left cerebral white matter	48	248	4.62	4.19	-24	20	-12
Left inferior orbital frontal gyrus	47		4.40	4.02	-34	26	-14
Left superior temporal pole	38		4.07	3.76	-44	26	-18
Right hippocampus*	-	105	4.47	4.08	24	-14	-12
			4.23	3.89	40	-12	-24
			3.56	3.34	42	-16	-18
			3.49	3.28	30	-12	-26
			3.47	3.27	40	-22	-18
<b>OBJECTS INCONGRUENT TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right superior frontal gyrus	10	273	4.92	4.42	18	58	18
Right superior medial frontal gyrus	9		4.17	3.84	10	60	38
Right cerebral white matter	-		3.76	3.50	20	46	22
Left caudate nucleus*	-	26	4.13	3.80	-6	16	8
			3.63	3.40	-4	18	2
<b>SHADOW INCONGRUENT TRIALS</b>							
<b>Bilinguals &gt; Monolinguals</b>							
Right superior frontal gyrus	10	1221	5.83	5.05	18	58	18
Right superior medial frontal gyrus	10		5.50	4.83	14	60	2
Right superior medial frontal gyrus	9		5.29	4.69	10	60	38
Right inferior temporal gyrus	20	263	4.76	4.30	44	-12	-30
Right inferior temporal gyrus	20		3.92	3.64	50	-6	-36
Right cerebral white matter	36		3.48	3.28	34	4	-30

Right hippocampus*	-	44	4.54	4.13	24	-14	-12
Left caudate nucleus*	-	21	3.78	3.52	-6	16	8
			3.70	3.45	-4	20	0
Left parahippocampal gyrus*	-	55	4.58	4.16	-24	-18	-30

\*p < .05 SVC